

Image RCE/1700



DOCKET NO. H0498.70155US00

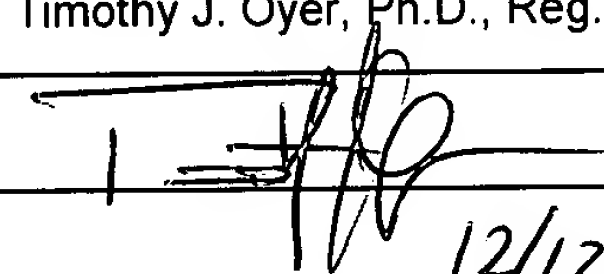
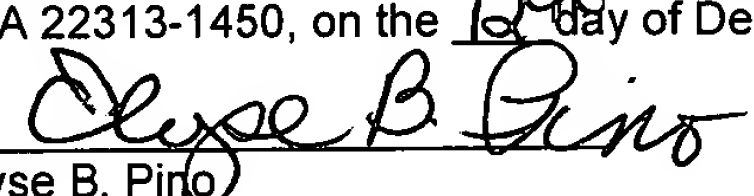
REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for continued examination of an utility or plant application filed on or after June 8, 1995. See The American Inventors Protection Act of 1999 (AIPA).	Application Number	09/940,072
	Confirmation Number	3068
	Filing Date	August 27, 2001
	First Named Inventor	Hong Yang, et al.
	Group Art Unit	1731
	Examiner Name	Fiorilla, Christopher A.

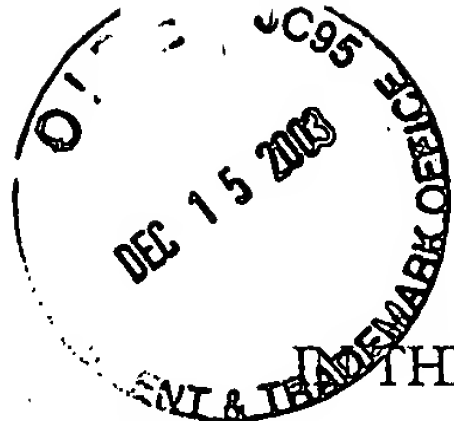
This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.

NOTE: 37 C.F.R. § 1.114 is effective on May 29, 2000. If the above-identified application was filed prior to May 29, 2000, **you** may wish to consider filing a continued prosecution application (CPA) under 37 C.F.R. § 1.53 (d) instead of an RCE to be eligible for the patent term adjustment provisions of the AIPA.

1. Submission required under 37 C.F.R. § 1.114
 - a. Previously submitted
 - i. ☒ Consider the amendment(s)/reply under 37 C.F.R. § 1.116 previously filed on November 12, 2003.
(Any unentered amendment(s) referred to above will be entered.)
 - ii. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on .
 - iii. ☐ Other:
 - b. Enclosed is/are:
 - i. ☒ Copy of Amendment filed on November 12, 2003.
 - ii. ☐ Affidavit(s)/Declaration(s)
 - iii. ☐ Information Disclosure Statement (IDS)
 - iv. ☒ Other: Petition for One-Month Extension of Time
2. Miscellaneous
 - a. ☐ Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of ____ months. (Period of suspension shall not exceed 3 months) and the Fee of **\$130.00** under 37 C.F.R. § 1.17(i) is enclosed.
 - b. ☐ Other:
3. Fees - The RCE fee under 37 C.F.R. § 1.17(e) is required by 37 C.F.R. § 1.114 when the RCE is filed.
 - a. ☒ Enclosed is a check in the amount of \$440.00 which covers:
 - i. ☒ RCE fee required under 37 C.F.R. § 1.17(e) (\$385)
 - ii. ☒ Extension of time fee (37 C.F.R. §§ 1.136 and 1.17) (\$55)
 - iii. ☐ Other
4. If the filing of this RCE necessitates an extension of time under 37 CFR § 1.136(a), the applicant hereby requests such extension of time.
5. If there is no check enclosed, or if the amount of the enclosed check in this RCE is incorrect, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 23/2825.

6. CORRESPONDENCE ADDRESS
<i>Correspondence address below</i>
CUSTOMER NUMBER: 23628

ATTORNEY'S NAME	Timothy J. Oyer, Ph.D., Reg. No. 36,628				
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7. SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED					
NAME	Timothy J. Oyer, Ph.D., Reg. No. 36,628				
SIGNATURE					
DATE	12/12/03				
CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)					
<p>The undersigned hereby certifies that this document is being placed in the United States mail with first-class postage attached, addressed to MAIL STOP BCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the <u>12th</u> day of December, 2003</p>					
 Elyse B. Piro					



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THE UNITED STATES PATENT AND TRADEMARK OFFICE

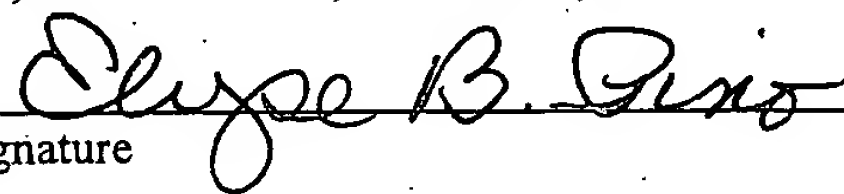
Applicant: Hong Yang et al.
Serial No: 09/940,072
Confirmation No: 3068
Filed: August 27, 2001
For: FABRICATION OF CERAMIC MICROSTRUCTURES

COPY AS FILED

Examiner: Christopher A. Fiorilla
Art Unit: 1731

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

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Signature

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith are the following documents:

- ☒ Response to Office Action
- ☒ Return Receipt Postcard

If the enclosed papers are considered incomplete, the Mail Room and/or the Application Branch is respectfully requested to contact the undersigned at (617) 720-3500, Boston, Massachusetts.

A check is not enclosed. If a fee is required, the Commissioner is hereby authorized to charge Deposit Account No. 23/2825. A duplicate of this sheet is enclosed.

Respectfully submitted,
Hong Yang et al., Applicants

By: 

Timothy J. Oyer, Ph.D., Reg. No.: 36,628
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Docket No. H0498.70155US00
Date: November 12, 2003
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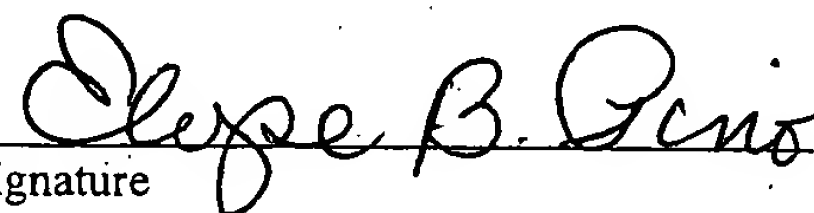
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Signature

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE

Sir:

In response to the Office Action mailed August 12, 2003, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims that begins on page 2 of this amendment.

Remarks begin on page 9 of this amendment.

In the Claims

Please amend pending claims 52, 55, and 56 as noted below.

1. (Previously presented) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
filling the mold with a ceramic precursor; and
heating the ceramic precursor under a moisture-free atmosphere to produce a ceramic structure.
2. (Previously presented) The method of claim 1, wherein the ceramic precursor comprises at least two different elements.
3. (Previously presented) The method of claim 2, wherein the at least two different elements are selected from a group consisting of carbon, nitrogen, boron, silicon, phosphorus, aluminum and hydrogen.
4. (Previously presented) The method of claim 1, wherein the ceramic precursor comprises at least three different elements.
5. (Canceled)
6. (Previously presented). The method of claim 1, wherein each element of the ceramic structure is derived from the ceramic precursor.
7. (Previously presented). The method of claim 1, wherein the step of heating is performed under an inert atmosphere.
8. (Canceled)

9. (Original) The method of claim 1, wherein prior to the step of filling, the ceramic precursor is prepared to have sufficient viscosity to completely fill the mold.
10. (Original) The method of claim 9, wherein the viscosity of the ceramic precursor is adjusted to have a value less than about 500 cm²/s.
11. (Original) The method of claim 1, wherein prior to the step of filling, the mold is treated such that it is inert with respect to reaction with the ceramic precursor and any subsequent products resulting from the ceramic precursor.
12. (Original) The method of claim 11, wherein the step of treating the mold comprises reacting the mold with an agent selected from the group consisting of alkylating, silylating, fluoroalkylating, or alkylsilylating agent.
13. (Original) The method of claim 1, wherein the step of filling comprises positioning a surface of the mold against a surface of a substrate to create a cavity which the ceramic precursor fills.
14. (Original) The method of claim 13, wherein the substrate is selected from the group consisting of silicon, silicon dioxide, silicon nitride, and any substrate with a smooth metallic surface.
15. (Previously presented) The method of claim 13, further comprising treating the substrate surface to render the substrate inert with respect to reaction with the ceramic precursor and any subsequent products resulting from the ceramic precursor.
16. (Original) The method of claim 15, wherein the step of treating comprises silanization.
17. (Original) The method of claim 1, wherein the step of filling comprises allowing the ceramic precursor to enter a volume of lower pressure.

18. (Original) The method of claim 1, wherein the step of filling comprises allowing the ceramic precursor to enter a volume by means of capillary action.
19. (Original) The method of claim 1, further comprising the step of curing the ceramic precursor in the mold.
20. (Original) The method of claim 19, wherein the ceramic precursor is cured chemically.
21. (Original) The method of claim 19, wherein the ceramic precursor is cured thermally.
22. (Original) The method of claim 19, wherein the ceramic precursor is cured in the mold at a temperature of at least 100 °C.
23. (Original) The method of claim 19, wherein the ceramic precursor is cured in the mold under an inert atmosphere.
24. (Original) The method of claim 19, wherein the precursor is cured in the mold under a moisture-free atmosphere.
25. (Original) The method of claim 1, further comprising removing the mold from a product formed from the ceramic precursor.
26. (Original) The method of claim 25, wherein the step of removing the mold comprises physically removing the mold.
27. (Original) The method of claim 25, wherein the step of removing the mold comprises dissolving the mold.
28. (Original) The method of claim 27, wherein the step of dissolving comprises dissolving

the mold in a solution containing fluoride anions.

29. (Original) The method of claim 28, wherein the solution contains tetrabutylammonium fluoride.

30. (Original) The method of claim 25, wherein the product comprises a cured ceramic precursor and after removing the mold, the method further comprises heating the cured ceramic precursor to a temperature of at least 1000 °C to produce a ceramic.

31. (Original) The method of claim 25, further comprising transferring the product to a substrate selected from the group consisting of silicon, silicon dioxide, silicon nitride, and metal.

32. (Original) The method of claim 1, wherein the ceramic precursor is a single precursor.

33. (Original) The method of claim 1, wherein the ceramic precursor comprises a polymer.

34. (Original) The method of claim 1, wherein the ceramic precursor comprises an oligomer.

35. (Original) The method of claim 1, wherein the mold exhibits elastomeric properties.

36. (Original) The method of claim 35, wherein the mold comprises polydialkylsiloxane material.

37. (Original) The method of claim 1, wherein the step of filling the mold is performed under an inert atmosphere.

38. (Original) The method of claim 1, wherein the step of filling the mold is performed under a moisture-free atmosphere.

39-49. (Canceled)

50. (Original) A method comprising:
providing a mold;
silanizing the mold; and
filling the mold with a ceramic precursor.
51. (Canceled)
52. (Currently Amended) A method comprising:
providing a silanized mold having at least one component with at least one dimension less than 100 μm ;
providing a ceramic precursor having sufficient viscosity to completely fill the mold, wherein the viscosity of the ceramic precursor is adjusted to have a value of less than about 500 cm^2/s ; and
thereafter, filling the mold with the ceramic precursor.
53. (Previously presented) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
reacting the mold with an agent selected from the group consisting of an alkylating, silylating, fluoroalkylating, or alkylsilylating agent, such that the mold is inert with respect to reaction with a ceramic precursor and any subsequent products resulting from the ceramic precursor; and
thereafter, filling the mold with the ceramic precursor.
54. (Previously presented) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
positioning a surface of the mold against a surface of a substrate to create a cavity which a ceramic precursor fills; and

treating the substrate surface to render the substrate inert with respect to reaction with the ceramic precursor and any subsequent products resulting from the ceramic precursor.

55. (Currently Amended) A method comprising:
providing a silanized mold having at least one component with at least one dimension less than 100 μm ; and
allowing a ceramic precursor to enter a volume of lower pressure in the mold.
56. (Currently Amended) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
filling the mold with a ceramic precursor; and
curing the ceramic precursor in the mold at a temperature of at least ~~100°C~~ 120°C.
57. (Previously presented) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
filling the mold with a ceramic precursor; and
curing the ceramic precursor in the mold under a moisture-free atmosphere.
58. (Previously presented) A method comprising:
providing a mold having at least one component with at least one dimension less than 100 μm ;
filling the mold with a ceramic precursor; and
dissolving the mold in a solution containing fluoride anions.
59. (Previously presented) A method comprising:
providing an elastomeric mold comprising polydialkylsiloxane material having at least one component with at least one dimension less than 100 μm ; and
filling the mold with a ceramic precursor.

REMARKS

Claims 52, 55, and 56 have been amended. No new claims have been added.

Claims 52 and 55 have been amended to recite "a silanized mold." Support for this amendment can be found throughout the specification, for example, on page 7, lines 20-23.

Claim 56 has been amended to recite a temperature of at least 120°C. Support for this amendment can be found throughout the specification, for example, on page 16, lines 20-23, or on page 12, lines 8-12.

Claims 1-4, 6, 7, 9-50 and 52-59 remain pending in the application. Claims 1-4, 6, 7, 9-38, 50, 53, 54, and 57-59 are allowed.

Rejection of Claims 52 and 55

Claims 52 and 55 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lochhead, U.S. Patent No. 6,039,897 ("Lochhead").

Nowhere in Lochhead do Applicants see a suggestion or motivation for a silanized mold. Accordingly, it is believed that claims 52 and 55 are patentable over Lochhead for at least these reasons. Withdrawal of the rejection of these claims is therefore respectfully requested.

Rejection of Claim 56

Claim 56 was rejected under 35 U.S.C. §103(a) as being unpatentable over Lochhead.

Applicants do not see where in Lochhead is a temperature of at least 120°C suggested or motivated. Instead Lochhead discloses temperatures less than 100°C (see e.g., column 6, lines 56-58). Thus, claim 56 is believed to be patentable over Lochhead for at least these reasons. It is therefore respectfully requested that the rejection of this claim be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

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If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
Hong Yang et al., Applicants

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Date: November **12**, 2003

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